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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,800	03/30/2004	Rick C. Stevens	5801EA253	6037
44341	7590	07/28/2005	EXAMINER	
JACOBSON & JOHNSON ONE WEST WATER STREET, SUITE 285 ST. PAUL, MN 55107			KALIVODA, CHRISTOPHER M	
			ART UNIT	PAPER NUMBER
			2883	

DATE MAILED: 07/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Qu

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/812,800	STEVENS, RICK C.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Christopher M. Kalivoda	2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 17 May 2005.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-20 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on May 17, 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments filed May 17, 2005 have been fully considered but they are not persuasive.

With respect to the first argument beginning on page 5, third paragraph, that there are no fibers in the ferrules, the examiner respectfully disagrees. As indicated in the previous action, the fibers are implied to be in the ferrules of Takahashi (U.S. Patent 5,136,681). Examiner referenced the ferrules when also referring to the fibers since this is where the fibers are located and was not trying to say that a ferrule is a fiber. Further support that there is fiber in the ferrules can be found in Takahashi, column 1, lines 58-62. This passage cites U.S. Patent 4,953,941, which clearly teaches there are fibers in the ferrules (see col 5, lines 34-40). Therefore, the examiner's position is that there is fiber in the ferrules.

With respect to the second argument on page 6, lines 17-19 that Figure 5 shows the fiber 34 as distinct from the ferrule since it is centrally located within the ferrule, the examiner believes this also supports position that there is a fiber in the ferrule since this is an end view taken along line 5.

With respect to argument 3, page 6, beginning on line 20, regarding coupling and coupler, the device can be considered a coupler since light is coupled from connector plug 31 to connector plug 32. In addition, the coupler is mentioned in the preamble and since the structure as claimed is present, the device is capable of coupling.

Regarding argument 4, page 7, beginning on line 16 regarding a teaching of optical faces in the coupler or a rotational joint in the coupler, the examiner respectfully disagrees since there are fibers in the ferrules as described above and rotation is permitted (col 5, lines 1-4).

Regarding argument 5, beginning on page 7, last paragraph, that there is no rotational joint, the examiner respectfully disagrees. As described above, rotation is permitted. Furthermore, transfer across two interfaces or two optical junctions is not claimed.

Regarding argument 6, beginning on page 8, line 16, an angled connector cannot be characterized as a butt connector. The previous office action indicated the butt connection at the interface (Fig 3, ref sign 41a, left end). This is the interface between 41a and 41b. The angled connection is clearly seen in Figure 3 or 4 at the other end of 41a.

Regarding argument 7, beginning on page 8, last paragraph, since Takahashi teaches the limitations of the claims, the rejection of the claims still stands. In addition, there is a rotational joint as described above and the cut faces couple as seen in Figure 3 at least.

Accordingly, this office action is made final.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2883

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3-13, 16 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takabashi, U.S. Patent 5,136,681.

Regarding independent claim 1 as claimed, Takabashi teaches an optical coupler (Fig 3, ref sign 31) comprising a first optical fiber (Fig 3, ref sign 41b) and a further optical fiber (Fig 1, ref sign 41a) rotatably mounted with respect to the first optical fiber (col 5, lines 1-4) with an end of the first optical fiber (Fig 1, refs sign 41b-right end) positioned proximate an end of the further optical fiber (Fig 1, ref sign 41a-left end) to permit transfer of an optical signal between the first optical fiber and the further optical fiber (col 4, lines 44-48) while permitting rotation thereof (col 5, lines 1-4).

While the reference does not specifically show the first fiber end proximate the further fiber end, fibers are implied to be in the ferrules 41a and 41b to permit light transmission described above. Please see response to arguments regarding fiber in ferrule.

Regarding independent claim 11 as claimed, Takabashi teaches an apparatus for optical coupling and optical decoupling comprising a first optical fiber having an angle cut terminus (Fig 3, ref sign 41a and ref sign 36), a rotational joint located on the first optical fiber (col 5, lines 1-4 and Fig 3, ref sign 31); a second optical fiber having an angle cut terminus (Fig 3, ref sign 42a and ref sign 35) with the angle cut terminus of the first optical fiber and the angle cut terminus of the second optical fiber positionable in

optically transmittable condition with each other to minimize back reflections (col 1, lines 6-13 and Fig 3, ref sign 35 and 36) and an alignment sleeve (col 4, lines 56-58 and Fig 3, ref sign 59) for holding the angle cut terminus of the first optical fiber and the angle cut terminus of the second optical fiber in rotational alignment with respect to each to each other.

The rotational joint allows the ferrule 41b to rotate about the ferrule 41 and results from the holder 51 keeping the ferrule 41b adjacent ferrule 41a.

While the reference does not specifically show first and second fibers having an angle cut terminus, fibers are implied to be in the ferrules 41a and 41b to permit light transmission described above and the ferrules (and thus fibers) have angle cut terminus'.

Regarding independent claim 16 as claimed, Takabashi teaches a method of twist free optical coupling comprising: forming a rotational butt coupled joint in an optical lead having a terminus (Fig 3, ref sign 41a, left end); forming a coupling angle cut face on the terminus of the optical lead (Fig 3, ref sign 41a and 36); forming a mating coupling angle cut face on the terminus of another optical lead (Fig 3, ref sign 42a and 35); and rotationally aligning the coupling angle cut face of the optical lead with the mating coupling angle cut face to thereby transmit an optical signal therebetween (col 4, lines 44-48) while minimizing back reflections (col 1, lines 6-13 and Fig 3, ref sign 35 and 36) and twisting of the optical lead (col 5, lines 1-5 since the ferrule 41b can rotate).

While the reference does not specifically state or show a butt coupled joint in an optical lead or an angle cut face in an optical lead, fibers/optical leads are implied to be

in the ferrules 41a and 41b to permit light transmission described above and the ferrules (and thus fibers/leads) have angle cut faces and are butted up against other ferrules/fibers.

Regarding claims 3, 5, 12, 18 and 19, there is an alignment sleeve mounted on the coupler (col 4, lines 56-58 and Fig 3, refs sign 59) with an alignment guide (Fig 3, ref sign 55 and 56 where the threads used as guides).

Regarding claims 4 and 20, there is a second optical coupler with a rotational joint mounted in the alignment sleeve (Fig 3, refs sign 32).

Regarding claim 6, there is a flanged member (Fig 3, refs sign 51 and 45) holding the first optical fiber and a rotatable member comprising a further flanged member holding the further optical fiber (Fig 3, ref sign 59).

Regarding claim 7, a U-shaped member holds the flanged member and the further flanged member in rotational engagement with each other (Fig 3, ref sign 57).

Regarding claim 8 and 10, at least one of the optical fibers or the further optical fiber includes an angle cut face (Fig 3, ref sign 36). While the reference does not specifically show a fiber having an angle cut terminus, fibers are implied to be in the ferrule 41a to permit light transmission described above and the ferrule has an angle cut face.

Regarding claim 9, the end of the first optical fiber and the end of the further optical fiber form a butt connection (Fig 3, ref sign 41b-right end and 41a-left end). While the reference does not specifically state "form a butt connection", these types of

connections are implied since fibers are implied to be in the ferrules 41a and 41b to permit light transmission described above and the figure shows the ferrules 41a and 41b (and thus fibers) butted up against each other.

Regarding claim 13, the first optical fiber includes a butt connectable end in the rotational joint of the first optical fiber (Fig 3, ref sign 41a-left end). While the reference does not specifically state "a butt connection", these types of connections are implied since fibers are implied to be in the ferrules 41a to permit light transmission described above and the figure shows the ferrules 41a and 41b (and thus fibers) butted up against each other.

Claims 2, 14 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takabashi, U.S. Patent 5,136,681 in view of Snow et al., U.S. Patent 5,039,193. Regarding claims 2 and 14, Takabashi teaches the limitations of claims 1, 11 and 16 as described above.

However, the reference is silent with respect to an optical conducting substance having an index of refraction matching an index of refraction of the first optical fiber/leads and the further optical fiber/lead located proximate the end of the first optical fiber and the end of the further optical fiber/lead or proximate the butt connectable end in the rotational joint or in the butt coupled joint. In other words, adding an index-matched fluid between the end of ferrules 41a and 41b.



Snow teaches the use of an optical conducting substance having an index of refraction matching an index of refraction of optical fibers in a rotating joint (col 2, lines 17-19).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Takabashi and include an optical conducting substance having an index of refraction matching an index of refraction of the first optical fiber and the further optical fiber located proximate the end of the first optical fiber and the end of the further optical fiber or proximate the butt connectable end in the rotational joint.

The motivation is to improve return losses (col 2, lines 17-19). In other words, the index-matched fluid improves return losses by reducing reflections that normally occur at glass air boundaries.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takabashi, U.S. Patent 5,136,681 in view of Snow et al., U.S. Patent 5,039,193.

Regarding independent claim 15 as claimed, Takabashi teaches an apparatus for optical coupling and optical decoupling (Fig 3) comprising a first optical lead having a butt connectable end (Fig 3, ref sign 41b, right-end), a first member holding the first optical lead (col 5, lines 1-4 and Fig 3, ref sign 51); a second optical lead having a butt connectable end (Fig 3, ref sign 41a); a second member holding the butt connectable end of the second optical lead (Fig 3, ref sign 49) in rotational relationship with respect to the butt connectable end of the first optical lead (col 5, lines 1-4 and abstract, lines 6-

Art Unit: 2883

8); the second optical lead having an angle cut end face (Fig 3, ref sign 36) to allow passage of an optical signal through the angle cut end face (col 4, lines 44-48);

While the reference does not specifically state "having a butt connectable end", these types of connections are implied since fibers are implied to be in the ferrules 41a and 41b to permit light transmission described above. The figure shows the ferrules 41a and 41b (and thus fiber) butted up against each other.

However, the reference is silent with respect to a transparent substance extending between the butt connectable end of the first optical lead and the butt connectable end of the second optical lead with the transparent substance having an index of refraction substantially equal to an index of refraction of the first optical lead and the second optical lead to thereby inhibit loss of an optical signal therebetween while permitting rotation thereof.

Snow teaches the use of an optical conducting substance having an index of refraction matching an index of refraction of optical fibers in a rotating joint (col 2, lines 17-19).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Takabashi and include a transparent substance extending between the butt connectable end of the first optical lead and the butt connectable end of the second optical lead with the transparent substance having an index of refraction substantially equal to an index of refraction of the first optical lead and the second optical lead

The motivation is to inhibit loss of an optical signal therebetween while permitting rotation thereof for the purpose of improving return losses (col 2, lines 17-19).

In other words, the index-matched fluid improves return losses by reducing reflections that normally occur at glass air boundaries.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patents 6,702,478 to Inagaki et al. and 4,989,946 to Williams et al. describe coupling fibers that are capable of rotation. U.S. Patent 4,953,951 also to Takahashi shows fibers in the ferrule. In addition, Examiner notes that the Snow reference described above could also be used to reject at least claim 1.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher M. Kalivoda whose telephone number is (571) 272-2476. The examiner can normally be reached on Monday - Friday (8:30 - 5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Art Unit: 2883

Status information for unpublished applications is available through Private PAIR only.

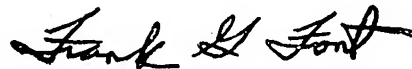
For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).



Cmk  
07/23/05



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